

Meliponiculture in the Petenes Biosphere Reserve, Campeche

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The Mayan peasant families that inhabit the Petenes Biosphere Reserve (RBLP), combine both activities for self-sufficiency (*i.e.* milpa, family gardens, hunting) and commercial activities (*i.e.* beekeeping, livestock, handicrafts) which develop throughout the year. These are part of a Pluriactivity strategy based on the use of resources [1]. The main objective of this peasant strategy is to guarantee family self-sufficiency through the production of food from the milpa and secondly, to produce surplus food for sale. In this context, the meliponiculture, or breeding of the native stingless bee (ko'olel kaab bee, *Melipona beecheii*) in the RBLP, is primarily an activity that complements the income of families for the purchase of goods that they do not produce. Although the ko'olel kaab honey is highly valued in the market, the bee's breeding is at risk of disappearing in the Yucatan Peninsula [2]. The decline of the meliponiculture by the Mayan peasants began with the introduction of the European bee (*Apis mellifera*), at the beginning of the last century. Initially, this species was introduced into the Yucatan peninsula by entrepreneurs for the commercial production of honey, and later adopted by the Mayan peasants. The substitution of the ko'olel kaab bee for the European one was due to the higher honey yield per hive of the latter species, even though each type of honey has different physical, chemical, microbiological, and organoleptic characteristics. Other factors associated with the decline of meliponiculture are: deforestation and forest fragmentation, the expansion of agriculture and livestock, the arrival of the African bee, the abandonment of the field due to lack of employment and income alternatives, and finally, the poor handling and reproduction of bees [3].

In the RBLP, meliponiculture is at risk of disappearing as it is only found in 6 of the 17 communities in the reserve. The meliponiculturists comprise mostly of elderly men with low level education, and weak social organisation. Likewise, there is a gradual loss of traditional knowledge about the management of the ko'olel kaab bee. There is little interest from young people, who usually migrate to cities to study or in search of jobs [4][5]. Currently, the honey, pollen and cerumen of the ko'olel kaab bee have a significantly higher price than products derived from European bee. This is due to the high demand of consumers who recognise their medicinal properties, and their botanical origin. However, prices on the market favour, and are controlled by, local and regional hoarders. The ways to favour Mayan farmers are: the strengthening of their social organisations to add value through productive diversification and the denomination of origin, and the promotion of the technological management of bee colonies in boxes to increase productivity, and improve the health of the products. In addition, the cultural value of meliponiculture can also favour its rescue.

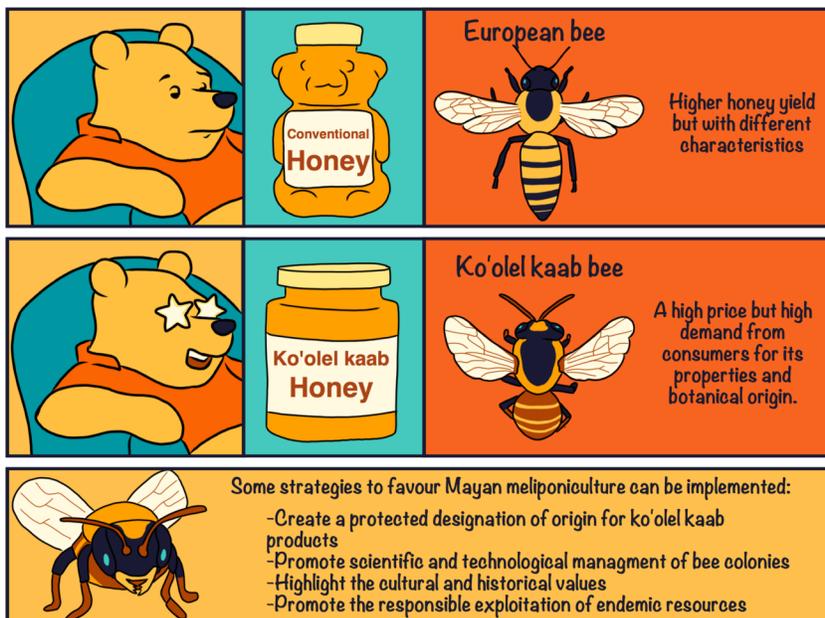
Contributions

Dr. Lucio Pat is a researcher at El Colegio de la Frontera Sur in Campeche, Mexico. He studies regional development using multidisciplinary approaches, food security, and apiculture. To know more about beekeeping of the ko'olel kaab bee [click here](#) (in Spanish). For more information about Dr. Pat's work [click](#)

Delicious honey without the sting, the mayan bee Ko'olel kaab!



The decline of the Mayan meliponiculture began with the introduction of the European bee (*Apis mellifera*), deforestation, and the expansion of agriculture. There is a gradual loss of the traditional knowledge about the management of the ko'olel kaab bee.



here.

Pablo Hernández Bahena wrote the article.

Lauren Nelson edited the article. Lauren is a Ph.D. student at Newcastle University (UK), researching computational drug design alongside the Northern Institute for Cancer Research. Lauren also writes a scientific blog, bringing science to the masses. (Twitter (@ashortscientist); Facebook (@ashortscientist); Instagram (@ashortscientist); Blog: ashortscientist.wordpress.com).

Ernesto Llamas made the illustrations. He obtained his Ph.D. in Biotechnology from Universitat de Barcelona doing his research at the Centre for Research in Agricultural Genomics. Creator, editor, and illustrator of Sketching Science. (Twitter @neto_flames; Instagram @eellamas).

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